SYNTHESIS OF ALIPHATIC 1,3-DIOLS UTILIZING REDUCED LIGAND CONCENTRATION AND WATER EXTRACTION

Abstract of the Invention

This invention is a process for synthesizing aliphatic 1,3-diols in one step by hydroformylation and hydrogenation of oxirane, carbon monoxide, and hydrogen employing a catalyst comprising a cobalt carbonyl compound and a cocatalyst metal compound ligated with a ligand in a ligand to cocatalyst metal atom molar ratio in the range of 0.2:1.0 to 0.6:1.0, optionally in the presence of a promoter, where recovery of product is preferably accomplished via water extraction of a diol rich phase from the bulk reaction mixture. The process modifications can, particularly in combination, be beneficial with respect to product recovery, catalyst recycle, and overall economics of a one-step process for producing aliphatic 1,3-diols.